National Institute of Environmental Health Sciences

Effects of low temperature on the schistosome-transmitting snail Oncomelania hupensis and the implications of global climate change

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Abstract:

The impact of climate change on schistosomiasis transmission has attracted considerable attention in recent years. As the intermediate hosts for schistosomes, snails play an obligatory role in schistosomiasis transmission. In order to determine the impact of low temperature on snail survival, we studied crystallization temperature (Tc) and lower lethal temperature (LLT) of the snail Oncomelania hupensis, the intermediate host of human blood fluke Schistosoma japonicum, under different physiological conditions. The mean T c of 'dry' snails was -12.79 +/- 1.17 degrees C, which is significantly lower than that of 'wet' snails (-5.36 +/- 2.11 degrees C). Survival of 'dry' snails was high (92% after 24 h) when the temperature was higher than -7 degrees C, then decreased rapidly between -7 degrees C and -12 degrees C (92% to 0% after 24h). LT(50) between 0.25 h and 24 h exposure was between -10.8 degrees C and -9.4 degrees C. Our data suggest that O. hupensis out of water could be avoiding freezing. As winter temperatures continue to rise due to global warming, O. hupensis may increase its range, thereby spreading schistosomiasis to the northern part of China.

Source: http://www.mapress.com/mr/content/v30/2010f/n2p108.htm

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Temperature

Temperature: Fluctuations

Geographic Feature:

resource focuses on specific type of geography

Freshwater

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Asia

Asian Region/Country: China

Health Co-Benefit/Co–Harm (Adaption/Mitigation): ☑

specification of beneficial or harmful impacts to health resulting from efforts to reduce or cope with greenhouse gases

A focus of content

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Foodborne/Waterborne Disease

Foodborne/Waterborne Disease: Schistosomiasis

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Time Scale Unspecified